

**Aviation Safety Investigation Report  
199600398**

**Boeing Co  
B737  
de Havilland Canada  
Dash 8**

**07 February 1996**

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**Occurrence Number:** 199600398                      **Occurrence Type:** Incident  
**Location:** 5km N Brisbane, VOR  
**State:** QLD    **Inv Category:** 4  
**Date:** Wednesday 07 February 1996  
**Time:** 0844 hours                                  **Time Zone** EST  
**Highest Injury Level:** None

**Aircraft Manufacturer:** de Havilland Canada  
**Aircraft Model:** DHC-8-102  
**Aircraft Registration:** VH-TNG    **Serial Number:** 041  
**Type of Operation:** Air Transport Domestic Low Capacity Passenger Scheduled  
**Damage to Aircraft:** Nil  
**Departure Point:** Brisbane  
**Departure Time:** 0844 EST  
**Destination:** Bundaberg

**Crew Details:**

<u>Role</u>	<u>Class of Licence</u>	<u>Hours on</u>	
		<u>Type</u>	<u>Hours Total</u>
Pilot-In-Command	ATPL	140.0	9700
Co-Pilot/1st Officer	ATPL	600.0	15000

**Aircraft Manufacturer:** Boeing Co  
**Aircraft Model:** 737-376  
**Aircraft Registration:** VH-TJD    **Serial Number:** 24298  
**Type of Operation:** Air Transport Domestic High Capacity Passenger Scheduled  
**Damage to Aircraft:** Nil  
**Departure Point:** Brisbane  
**Departure Time:** 0844 EST  
**Destination:** Cairns

**Approved for Release:** Tuesday, July 23, 1996

Factual Information

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The DHC8 aircraft VH-TNG was cleared for takeoff from runway 32 and was assigned a heading of 315 degrees, which is the runway direction. After takeoff the pilot turned right onto a heading of 315 degrees, and this reduced separation and brought the aircraft into conflict with the Boeing 737 VH-TJD which had become airborne from runway 01 at the same time. The pilot of VH-TJD had been instructed to turn left at 3 NM onto a heading of 350 degrees. The pilot of VH-TNG called Brisbane Approach at about 2 NM established on a heading of 015 degrees. He was instructed to immediately turn left onto a heading of 310 degrees to re-establish separation.

#### Recorded Radar Data

Examination of recorded radar data was undertaken to determine the proximity of the aircraft at the time of the incident. VH-TNG was observed to take off on runway 32 and commence a right turn at recorded mode C pressure altitude of 900 ft. At 2000 ft the aircraft had stabilised on a magnetic track of 015 degrees. At 2700 ft VH-TNG turned left and commenced tracking 327 degrees magnetic.

VH-TJD was observed to take off on runway 01 and commence tracking along the extended centreline of the runway. At approximately 3.5 NM DME at a pressure altitude of 2800 ft, VH-TJD turned left and commenced tracking 348 degrees magnetic.

A minimum horizontal separation of 2.2 NM occurred at approximately 0832 UTC and the vertical separation at that time was 700 ft. The minimum separation standard is 3 NM and 1000 ft.

#### Examination of VH-TNG Crew Actions

The Company inquiry reconstructed the likely sequence of events leading up to the incorrect heading being taken up by the pilot of VH-TNG.

#### Pre-flight Preparation.

The cockpit pre-flight preparation proceeded normally. An airways clearance was obtained, a transponder code was not immediately available, but was this was issued later during taxi. The pilot in command (PIC) was the pilot flying for this sector. he conducted the standard turn-around, pre-takeoff and departure briefing according to the airways clearance received. This briefing was given relative to an anticipated departure from runway 01. Standard procedure in this circumstance is to set 016 (runway magnetic heading) on both horizontal situation indicators (HSI,s) with an allowance for crosswind drift.

#### Taxi Out.

When taxi clearance was obtained, both runways 01 and 32 were available for departure, and runway 32 was assigned. When clear of the inner apron areas the PIC confirmed the instrument serviceability checks, briefed the change of HSI heading setting to 315 degrees (runway 32 magnetic heading) plus 5 degrees for crosswind allowance. The PICs HSI was set to 320 thus acknowledging the change of runway from the runway anticipated in his previous briefing. The PIC could not be certain that the copilot reset his HSI to the appropriate heading. The copilot believes he did reset the HSI, but there was inadequate cross checking at this point, and it is possible that the copilots HSI may have remained set at 016.



The PIC then continued with a revised takeoff and emergency return brief for runway 32. No revised brief for the Standard Radar Departure (SRD) relative to the change of runway was made. This was at variance with company standard operating procedures (SOPs) and the brief would have ensured that both HSI's were set correctly to 315 plus wind allowance.

### Takeoff

When all checklists were completed as far as possible the radio was transferred to tower frequency, and the copilot called ready some distance back from the holding point. The aircraft was cleared to line up on runway 32. As the aircraft rolled onto the runway to lineup the tower advised Tango November Golf assigned heading 315, clear for takeoff. No reference was made to turning left or right and, as evidenced from a play back of the tower tape, the instruction was clear and concise. The copilot hesitantly acknowledged the clearance with Tango November Golf, right onto 315. The words right onto were not queried by the tower or the PIC. At this stage the copilot, as non flying pilot should have set and confirmed his heading on the HSI to be 315. The PIC remembered the copilot reaching for the adjusting knob on the HSI but did not confirm that the HSI was correctly set. This a further breakdown in SOPs.

After takeoff, checks were completed and passing 600 feet the PIC asked the copilot to confirm the right turn. The copilot confirmed right onto 015. The copilot transferred to Brisbane Approach Frequency, and the aircraft was then promptly vectored away from the resulting confliction.

### Analysis

#### Air Traffic Control Phraseology.

The instruction was given assigned heading 315, cleared for takeoff. The use of the phrase "maintain runway heading" may have prevented this incident. The Civil Aviation Safety Authority Head Office had recently issued an instruction to Air Traffic Services to discontinue the long established practice of issuing the instruction "maintain runway heading."

### Crew

The PIC had only recently gained command status and was relatively inexperienced on the DHC8. The copilot was senior in age and experience on type which may indicate a flat cockpit command gradient.

### Relevant Factors

1. The PIC did not adequately re-brief on the standard radar departure or the change of runway to 32.
  2. The PIC did not adequately monitor or cross check the copilots instrument settings.
  3. The PIC did not detect the error in readback of the departure clearance by the copilot, and was unclear as to the terms of the
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departure clearance before takeoff.

4. The crew did not comply with Company SOPs and two crew procedures.
5. Inappropriate Air Traffic Control phraseology.

